

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application:

**Listing of Claims:**

1. (Currently amended) A method for identifying plant genetic material whose actions cause increased production of a metabolite or metabolites of interest in plant cells, said method comprising:

- a) causing random integration into the plant genome in plant protoplasts of at least one enhancer-containing T-DNA genetic element harboring sequences to enable bacterial replication and selection;
- b) growing said protoplasts to the stage of callus cultures;
- c) sampling said callus cultures in such a manner as to retain viability thereof and to obtain cells for continued growth and recovery,
- d) analyzing said cells by at least one radioligand displacement assay to identify the callus cultures producing the metabolite or metabolites of interest, wherein the radioligand is a nicotine acetylcholine receptor antagonist or a nicotine acetylcholine receptor agonist; and
- e) isolating and identifying the plant genetic material, the action of which has been stimulated by the enhancer-containing T-DNA genetic element in the sampled, identified callus cultures.

2. (Original) A method of claim 1, wherein the plant genetic material which is identified is a plant gene whose action causes a plant cell to produce an increased amount of a metabolite or metabolites of interest.
3. (Original) A method of claim 2, wherein the plant genetic material which is identified is a regulatory gene.
4. (Original) A method of claim 1, wherein the analysis of callus cultures detects the production of metabolites of interest having pharmacological properties.
5. (Cancelled).
6. (Original) A method of claim 1, which comprises the further step of propagating at least one callus culture producing said metabolite or metabolites.
7. (Original) A method of claim 1, wherein said plant is a tobacco plant.
8. (Original) A method of claim 1, wherein said enhancer sequence is a plant viral enhancer sequence.
9. (Original) A method of claim 8, wherein said enhancer sequence is delivered to the plant via *Agrobacterium tumefaciens*.
10. (Currently amended) A method of claim 1 wherein said radioligand is a nicotinic acetylcholine receptor agonist.
11. (Currently amended) A method of claim 1, wherein said radioligand is a nicotinic acetylcholine receptor antagonist.
12. (Currently Amended) A method of claim ~~15~~1 , wherein said radioligand is <sup>3</sup>H-epibatidine.

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13. (Previously presented) A method of claim 1, wherein said radioligand is  $^3\text{H}$ -methyllaconitine.

Claims 14-25 (Cancelled)